VHFER

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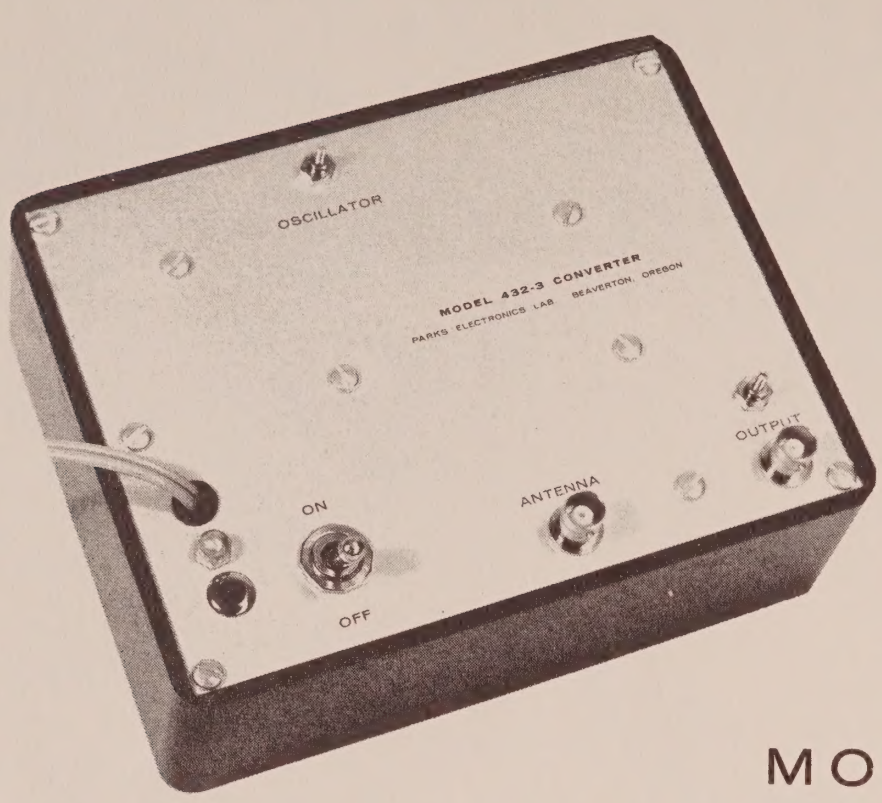
50 MC. AND UP

Volume 4, No. 6 July-August, 1966

432 ANTENNA CONTEST

A 432 DX MAN'S CONVERTER



MODEL 432-3

NEW FEATURES:

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This converter uses the Texas Instruments TI-XMO series transistor. We pick the best from the 01 and 06 types to give you performance equal to or better than the general run of the former TIXMO5, apparently no longer available---at least for now. From our tests these transistors are superior in performance to the 2N3399 we formerly used and cost much less. They're also less expensive for you to replace if you damage them with r.f. This converter has a tuned input, something our previous converters and preamps did not have. It cuts down on interference from other stations in the big cities.

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POLARIZATION CONSIDERATIONS IN THE 1215-1300 MHz BAND

By G.A. (Al) Olcott, K7ICW/AA7ICW*

Recently, discussions involving the seemingly age old problem of polarization usage has caught up with progress on 1296. One school proposes that horizontal should be used, another vertical, and yet still another, circular.

Right now the majority of activity on 1296 is being done by those who own surplus converted APX-6 rigs. These units are essentially modulated oscillators and have broad receivers, and some drifting is noted, but yet are not to be considered "wide band" by any measure. The actual output frequency of the APX-6 units centers around 1225 MHz. With further cavity shortening, 1296 MHz can be reached. Output power from 2 to 4 watts is normal. The normal band covered is 1215 MHz. Antenna polarization is horizontal and vertical.

The next group of operations is fundamental crystal control, or equivalent VFO or VXO systems, and the frequency coverage used is 1296 to 1300 MHz. Narrow band receiving techniques and stable operation is a necessity. 10 watts appears equal to a KW under these controlled conditions. Antenna polarization for this group is predominantly horizontal world wide.

A small but growing group of technical perfectionists are using the frequency 1296.000 MHz. This frequency was chosen as the primary moonbounce frequency. Ultra stability, high transmitter power, large antenna size and gain, extremely narrow bandwidth receiving equipment and elaborate state-of-the-art approach is the by-word here. A standard polarization for this group is still open to question, but best results have been obtained with circular polarization. Here the term "phase sense" enters the picture to complicate things. On any two-way path from a satellite, whether it be the moon or man-made, Faraday rotation takes place, and the theory says that the transmitted signal will be received in the opposite phase sense. This means that a station transmitting a signal horizontally polarized will get a good portion of it back vertically polarized.[1] Use of circular polarization will minimize this effect greatly, but present methods of producing circular polarization are inherent in that either right-hand or left-hand circular phase sense are generated. Signals transmitted right-hand circular should be received left-hand circular. Past operations have worked out that the higher E.R.P. (effective radiated power) station used right-hand circular for convenience of standardization. Usually, the station with the largest antenna gain qualifies here.

Worthy of mention is a group of stalwarts using both horizontal and vertical in the same antenna configuration, one polarization used for "polaplexer" principle. Briefly this consists of transmitting with one polarization that is separated by the I.F. frequency from the receiving frequency which is received simultaneously duplex on the opposite polarization.

One can see then, without getting into specifics of polarization causes and effects that there is more to this than meets the eye. Here are some comments taken out of context from some of the hams in California:

*510 S. Rose, Las Vegas, Nev. 89106

WA6MGZ. . . .A good reason to be horizontal is to be cross-polarized from unwanted 432 MHz energy radiated from vertical antennas via the 3rd harmonic on the West coast.

W6NLZ. . . . .Nearly all of the true 1296 gang in the L.A. area who have pioneered work on 1296 are horizontal.

WB6IOM. . . . Small antenna size without using relatively inefficient dishes can be had by using the circularly polarized helix array.

W6ZOP. . . . Horizontal and vertical polarization combined has been used by the San Bernadino Microwave Society in a "polaplexer" arrangement for years.

W6GDO. . . . .Vertical might be a better antenna for some using the APX-6 and similar equipment, especially to those located distantly from heavy activity and where observation of beacons such as TACANS and VORTACS can be used for "DX" indicators.

W6NGN. . . . ."I'm vertical."

E.P. Tilton, W1HDQ says that tropospheric bending work has been done with low power in the 1215 band over a land range of 400 miles. Generally speaking, the same polarization used at each end is most favorable. For signal levels produced by this medium, it is doubtful that one polarization or the other would be superior except over a mountain obstructed path. Theory says that vertical would be superior in this case.

For future work using OSCAR satellites and cross-band 432/1296 it is desirable to use circular polarization. However if linear polarization must be used, it will be most favorable that horizontal polarization be used on 1296 to eliminate unwanted 3rd harmonic energy from 432 generated from local vertical antennas, yours especially! Transistor burnout will be greatly reduced also, and I doubt that many can tolerate slightly elaborate double coax relay switching systems used by some on 432 to eliminate burnout. These additional lossy items used on 1296 may be intolerable to your N/F.

For those who use the APX-6, some attenuation of high-powered "garbage" such as radars, TACANS, VORTACS, etc., may be greatly reduced by use of horizontal polarization, but then again, the fringe area station might like the availability of these beacons to observe band conditions.

At certain geographical locations such as deep valleys or canyons, it has been found by some that one polarization of the other is most favorable to work outside the area. Some sort of polarization re-inforcement is taking place. Obviously, use of the favored polarization is then a necessity.

A word about noise. Even on an APX-6 receiver, man made noise can be heard. Most of this is extremely short range however and short lived. As transistors for 1296 become more available, the receiver front end N/F will get low enough in some locations that man made noise will be heard with regularity. It is common now to

hear many complain about noise on 432 where it hardly was a problem 5 years ago. So the obvious now presents itself, use of horizontal polarization will attenuate man-made noise.

Interference is almost unknown on 1296, but as more and more get on the band with higher power and larger antennas, interference to something is bound to occur. Most government and commercial services use vertical polarization on near-by and harmonically related frequencies.

The critical factor of polarization is highly noticeable at 1296. A short distance separation between stations cross-polarized shows a tremendous signal loss. This is demonstrated in the practicality of the "polaplexer" principle. A poorly-designed, or poorly-fed antenna may have lobes in several planes which lead one to believe that the antenna is very useful for receiving various polarizations. The truth is that this type of antenna is only useful in the limited world of the user. Attempts to use this configuration on weak or DX signals will be disappointing or misleading. A station located on a ridge or hilltop may experience this. A particular location may be good for 20 db. of signal above the antenna gain, and just about anything used for an antenna would work. A properly-polarized antenna should mean the difference between little or no signal or copyable on an extended-range path.

In conclusion it can be said that the majority of users of the 1296 band use horizontal polarization. All others are using different polarizations for special uses such as moonbounce, etc. For space communications the value of circular polarization has been shown. Those who do not take advantage of this are doing things on a temporary basis, and plan to conform as soon as possible. From a physical or mechanical viewpoint, there is little difference between installations that shouldn't allow change to horizontal polarization easily for ground communications. The few using vertical are isolated groups with no liason with others outside their area. Usually it is a matter of arbitrary choice. The theoretical advantages of vertical in some specialized situations should be out-weighed in favor of standardized horizontal polarization which should result in more activity on the whole.

These arguments have been presented hopefully at an appropriate time. It is hoped that better usage and standard VHF contest usage will result from this discussion and that more constructive work by the majority past the APX-6 stage will be initiated.

[1]Editor's Note: Keep in mind that although some rotation on moon-bounced signals may exist, all 2 meter moonbounce work done by hams (not Arecibo) is with linear polarization (horizontal or vertical) and that the same polarization is used for both transmitting and receiving. L.P.

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Moonbounce Newsletter

by Victor A. Michael, W3SDZ
Box 345, Milton, Penna.

Well, another moonbounce season has just about come to a close, and it appears that other than the two meter work of VK3ATN little has been accomplished this year. Speaking of VK3ATN, the latest word I have is that two-way contact has yet to be established, although Ray is copying K6MYC with a good margin of signal for a two-way contact. The limited time on the moon for Ray's antenna is what is making the two-way a difficult chore, but I'm sure that it will be accomplished within the next few months. In discussions with Ray on 15 meters I find he would be interested in a six meter try after a two-meter two-way is accomplished. It also appears that the stacked rhombic array for fellows on the east coast might be the answer to a real first on six meters. Ray's present array, when tuned up on six meters, will hit the moon at a higher angle from his QTH, thus the hour angle will be lower here in the states. If you have some interest in this I suggest you write to Ray or talk to him on one of the HF bands. I haven't talked to Ray for some weeks now.

I haven't had much time to do anything in ham radio recently. I just purchased a 177 acre farm adjacent to our present QTH on top of the mountain. I now own the entire hilltop and we are in the process of rebuilding the farm house to house our expanding family. The most interesting thing about the farm is that it has a hill that slopes at nearly the perfect angle of 41 degrees to build a large fixed-reflector type antenna of any size I desire. Financial limitations will probably limit the size to around 150 feet. The weather will prevent any work before next spring, but I have every hope and intention of getting something started then.

I would like to take a few lines to make some comments about a subject that has been kicking around the VHF circles for some time now---integration techniques for weak-signal moonbounce work. This is a subject that I'm surely no expert on, but I have talked with everyone I know who is. What I have found out isn't very encouraging for moonbounce work on 432 and up. I don't want to take up too much space on the subject so I will have to summarize. It appears that a bandwidth of about 50 cycles is about as narrow a system you can count on for a moon-reflected signal. This can be obtained in a couple of ways. First, you can use a narrow audio filter with some sort of readout device such as a pen recorder or damped audio voltmeter. The other method was described by W2IMU in the last VHFER--simple ear integration. Either way it will work out to a 50-cycle system bandwidth. The problem with a narrower bandwidth and trying to use a moon-reflected signal to lock up a phase detecting system is simply that the phase of the return echo is distorted by the signal being reflected from different portions of the moon. This has all been determined by careful experiments done by labs with facilities that produce evidence you can't argue with. The reason I bring this up is to help you save time in your system planning for EME work. While we looked at various schemes for weak-signal work, we are now of the opinion that antenna gain is the place to look for system improvement.

When you consider everything, the antenna isn't the worst place to look for system improvement. I made an offer of some material on the antenna subject in the last issue of the VHFER. Many sent in the return envelopes, but I must admit I haven't gotten the information out yet. I had some material ready to mail, but so much more has come up in the meantime I have held off the mailing until I could get the additional material written. I hope to get this done after the Syracuse Roundup and include the results of W2IMU's antenna talk. Please be patient, those who have written for the information, and if you haven't written just send me a self-addressed envelope with postage for two ounces before Oct. 10th.

(continued on page 7)

CONSTRUCTION TIP ON 2 METER REFERENCE DIPOLE

Ed Cornwall, W7SBJ, of Seattle wrote me about his technique of making the reference dipole described in the April, 65 VHFER. It looks very good to me and certainly results in a stronger unit. It also looks it could be made with set screws to hold the elements. This is one of the problems with the silver-soldered one I made. It is kind of bulky if you want to send it to a friend by mail. Ed says, "I used hard-drawn copper tubing I had on hand. The problem developed that the soldering heat softened it too much to suit me. I dissembled it and strengthened the two 90 degree joints by using sweat-soldered Ts, cutting the excess third leg of the T off. (Fig. 1) The cut-off T gives a great deal of reinforcement and is better than a regular tubing elbow for the coax connection. The cut off arm makes an excellent "lead thru" and connection point for the center lead on the opposite side."

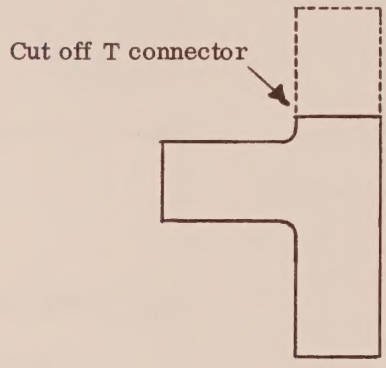


Fig. 1

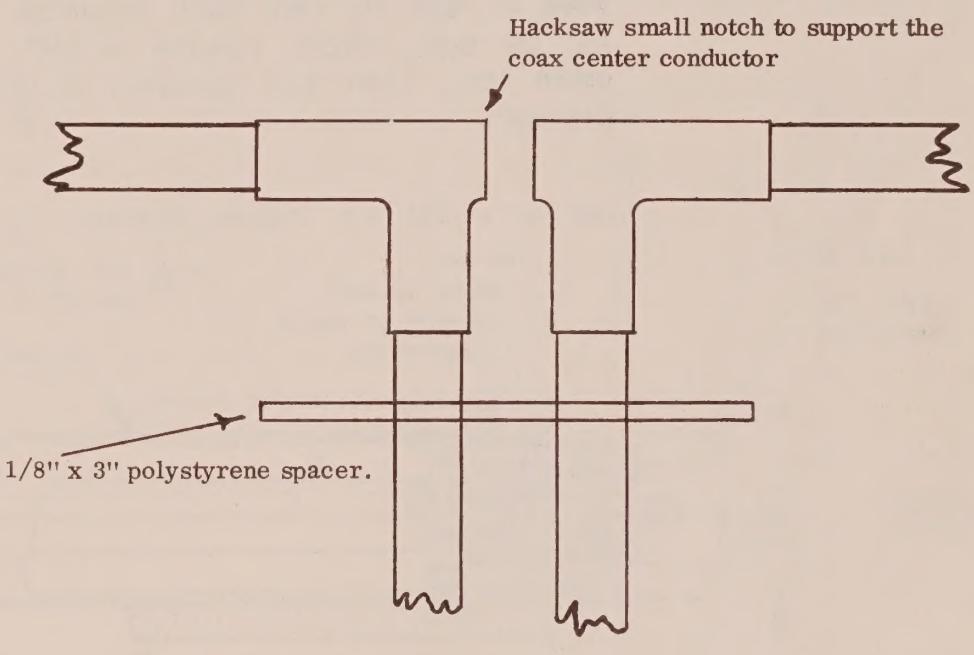
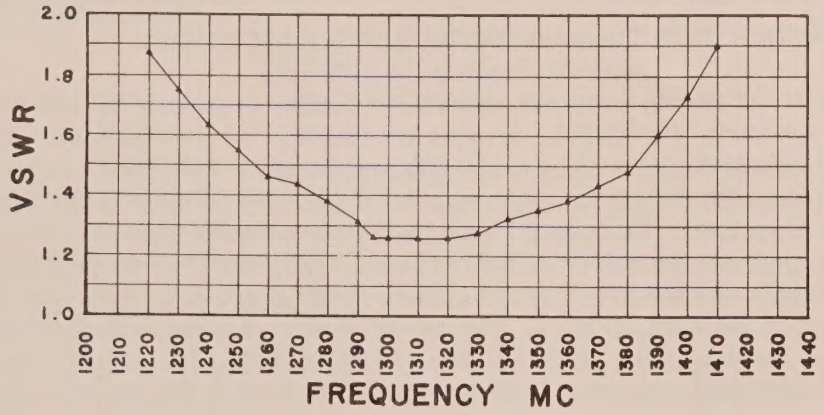


Fig. 2

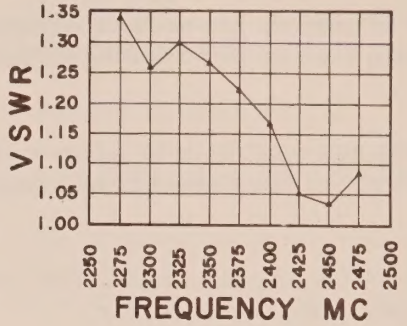
I received a letter from Ken Holladay, K6HCP, concerning his group's interest in 2304 Mc. moonbounce work. This is the first band where a small easy-to-build dish will work the EME path with reasonable signals. The equipment limitations will become more difficult for the average serious worker. The receiver has about the same difficulty as on 1296, but the transmitter and feedline get rather difficult. If the antenna is really your limitation I would strongly recommend you get in touch with K6HCP for some help in getting a 2304 system working.

The annual Syracuse VHF roundup will be held again this year on October 8th. Dick Turrin, W2IMU and I will be each presenting talks about different phases of the moonbounce problem. I will be covering the more general aspects while Dick will talk on the antenna problem. I hope anyone within traveling distance will try to make this one as it is always a really outstanding affair with attendance usually over the 500 mark of serious VHFers.

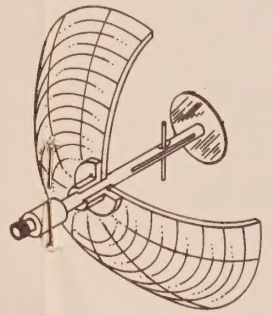
I'm out of time for writing this month, but I hope you will all keep in touch with your progress on EME work. Please be patient with correspondence from me over the next few months while we are moving to the farm.

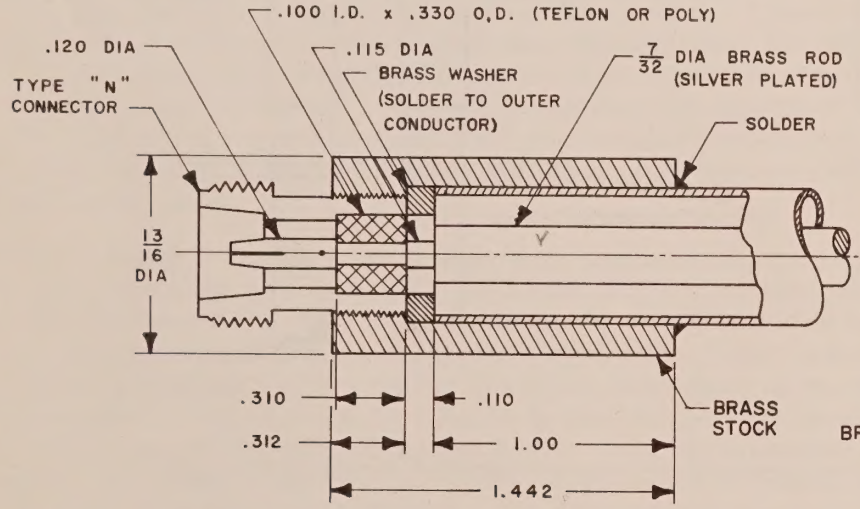


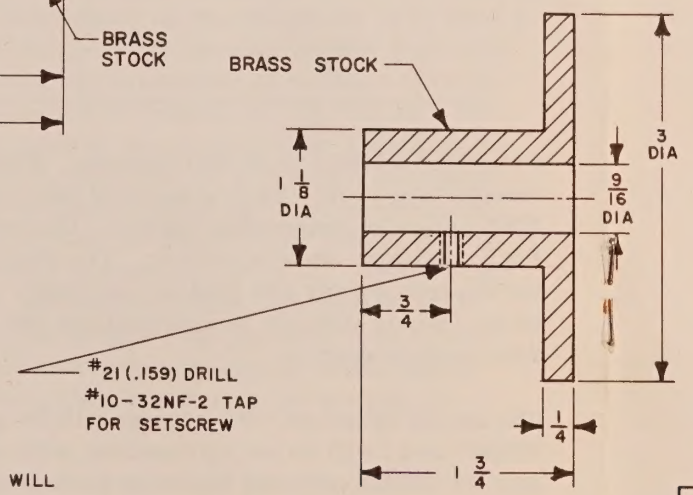
VSWR OF 1296 MC UNIT WHEN MOUNTED IN 48" DIA DISH, FOCAL LENGTH 14 3/4". VSWR WILL VARY BUT SLIGHTLY IN OTHER DISHES.



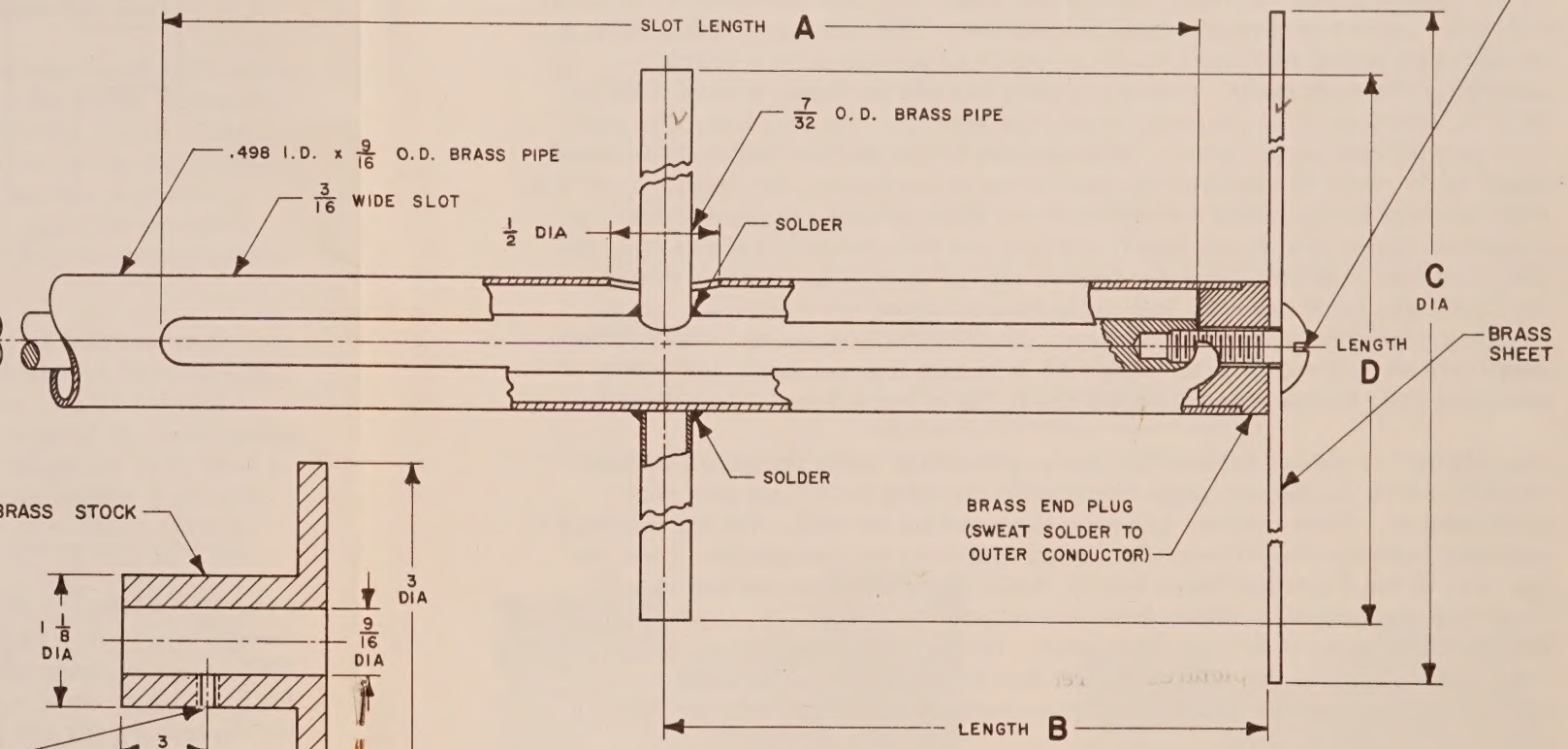
VSWR OF 2400 MC UNIT IN "FREE SPACE".







MOUNTING FLANGE
SCALE—FULL



NOTES:

1. OVERALL LENGTH IS NOT CRITICAL, BUT APPROX. 20" WILL COVER MOST FOCAL LENGTHS.
2. FOCAL LENGTH OF PARABOLA = $\frac{(\text{DIAMETER})^2}{16 \times \text{MAX. DEPTH}}$
3. SEE CHART FOR DIMENSIONS A, B, C, D FOR FREQUENCIES 1220 MC. 1296MC. AND 2400 MC.
4. ALL OTHER DIMENSIONS REMAIN THE SAME.

	1220 MC	1296 MC	2400 MC
A	2.673	2.602	1.42
B	4.840	4.557	2.48
C	4.732	4.456	2.42
D	4.529	4.265	2.36

LAUNCHER

DESIGN BY: D.K. GOSHAY W6MMU & R. WAREHAM WA6HJV

DRAWN BY	MODIFICATIONS BY
J B CARLILE 6-6-66	G.A. OLCOTT-K7ICW
SCALE AS NOTED	MATERIAL AS NOTED

432 ANTENNA CONTEST RESULTS
by K7AAD

The results of the May 15 VHF confere nce at Santa Barbara, Calif. are summarized below. A few comments are probably in order so that readers don't jump to erroneous conclusions.

While different club members may (and do) have different ideas about the accuracy of measurements, I think there are some areas of agreement I can point out and shortcomings.

METHOD: Antennas to be tested are used as RECEIVING antennas. This method is simpler and has fewer chances for serious error.

The signal source is a transistor oscillator-multiplier (crystal-controlled) at 432 Mc. with 1 Kc amplitude modulation driving a moderately directional antenna, vertically polarized, and mounted about 10' high, as I recall.

At the receiving site, probably 150-200 feet away, is a Hewlett-Packard voltmeter with a db. scale and narrow-band 1 Kc amplifier. The antenna is connected to a plunger-type tuning stub and a 10 db. coaxial pad terminated in a coaxially-mounted germanium diode. Output is square law and the meter is calibrated for this. A reference dipole is used to establish zero db. The stub is used to peak the signal as read on the meter. Each antenna is oriented for maximum received signal by its owner at whatever reasonable height he chooses, say from 6 to 10 feet. Peak readings on the meter are recorded and these results are given below. A correction factor of a db. or less is probably not included and I assume from the data I have on hand that corrected figures may be up to 1 db. higher. Perhaps the signal was not at zero db. with the reference dipole but -.8 or so. These results are good compared to last time. Members have wised up. The previous year there were Z commercial yagis with less gain than the dipole and better reception from the back than from the front. Have you got one of those?

Now whether or not you believe the figures preceding, some things are obvious. The home brew 11 element yagis described by W1HDQ in QST put on a good performance. Three entrants had made them and all did well. The big extended - expanded colinears (W6GD) usually win but they were not brought down from the bay area of San Francisco (their home). K6IBY's big skeleton slot had been measured at appreciably higher gain on a commercial range. It is quite possible the larger antennas do not get a fair shake. Ground reflections are always a problem. Credit goes to Roy Brady and Bob Melvin for putting on the contest and to Frank Merritt for the pictures. If reproduction here is sad, it's my fault.

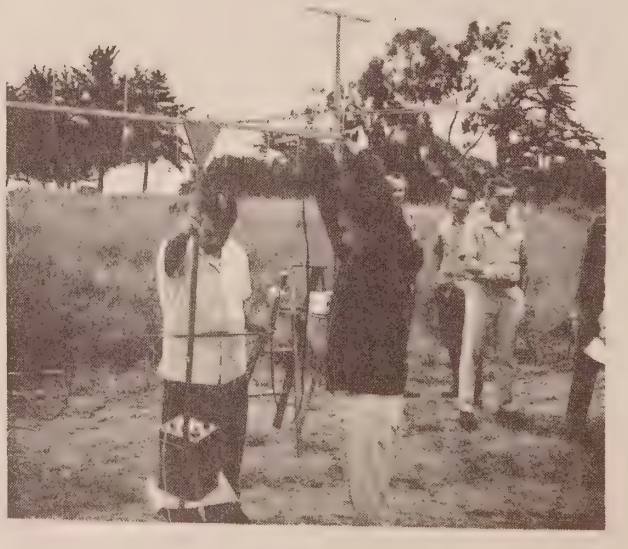
(continued on page 11)

TWO METER AURORA OPENING

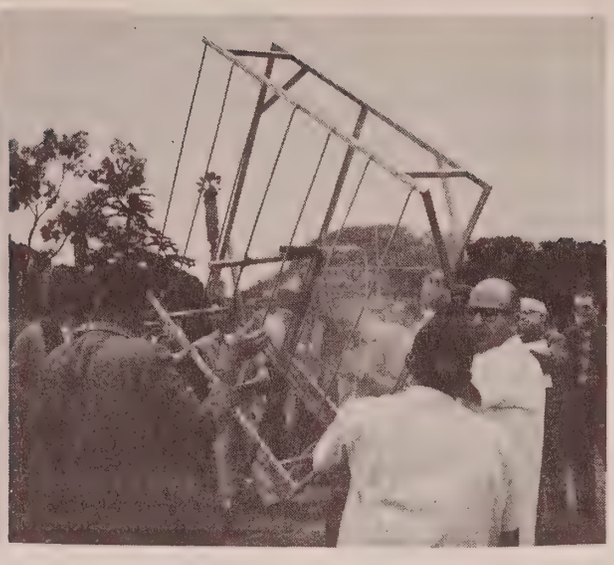
Saturday eve., Sept. 3, was the date of an excellent aurora opening which made possible several 2-way s.s.b. contacts between northern Calif. and Washington and Oregon. Successful participants out here were WB6KAP, W6GDO, W7WVE and K7ZIR. Stations in southern Calif. were notified but signals did not extend that far down. C.W. signals were strong to W6GDO, up to S-9. K5WXZ heard stations in Illinois, Ohio and Nebraska. No doubt there was lots of d-x done in the east but reports have not come in.

Entrant	Antenna type	Recorded Gain (db over dipole)
K6OKC	J Beam 20 el skeleton slot	+8.2
K6HCP	Cushcraft 16 el colinear	+10.5
K7ICW	AT150/SRC dipole 200-450 Mc.	-.8
W6PUZ	H.B. W1HDQ Yagi (11 elements)	+12.2
WA6MGZ	H.B. W1HDQ 4 11 element yagis	+16.4
WØKJY/6	Modified Cushcraft 8 over 8 colinear re-test with new balun	+1.2 +6.6
K6IBY	H.B. 80 element skeleton slot	+13.5
WA6NCT	90 degree corner reflector	+4.0
W6PUZ	H.B. ground plane	-.75
W6BUR	H.B. W1HDQ 11 el. Yagi	+10.8
WA6MGZ	H.B. colinear 8 el. with screen refl.	+9.7
K6OKC	H.B. quad Yagi 4 ea. 11 el. yagis (44 el)	+11.2
W6ZOP	H.B. reflex	+7.0
W6HPH	H.B. stacked vertical diamond dual rhombic (this one stayed together)	+11.0

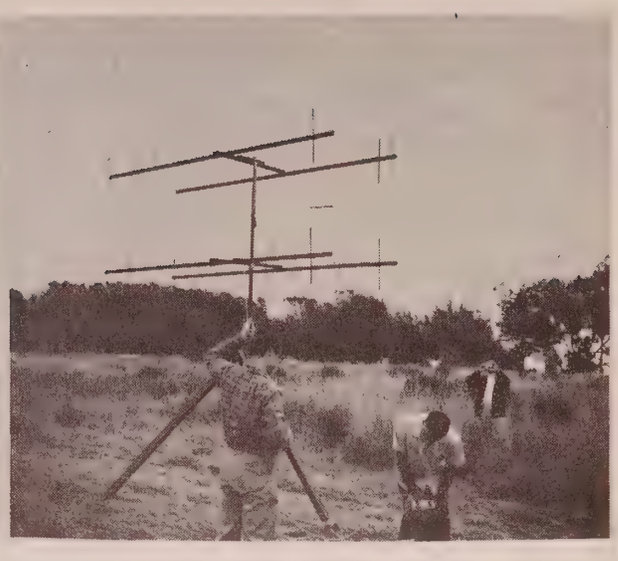
Al, K7ICW, holding his broadband military dipole.



George, W6BUR, peaks his W1HDQ Yagi while Roy, W6UXN, reads the meter.



Here's the reflex antenna with owner Paul, W6ZOP, (on left) aided by Hank, W6GGV (with glasses) on right.



W6OKC peaks his quad Yagi array.

ODDS & ENDS
by K7AAD

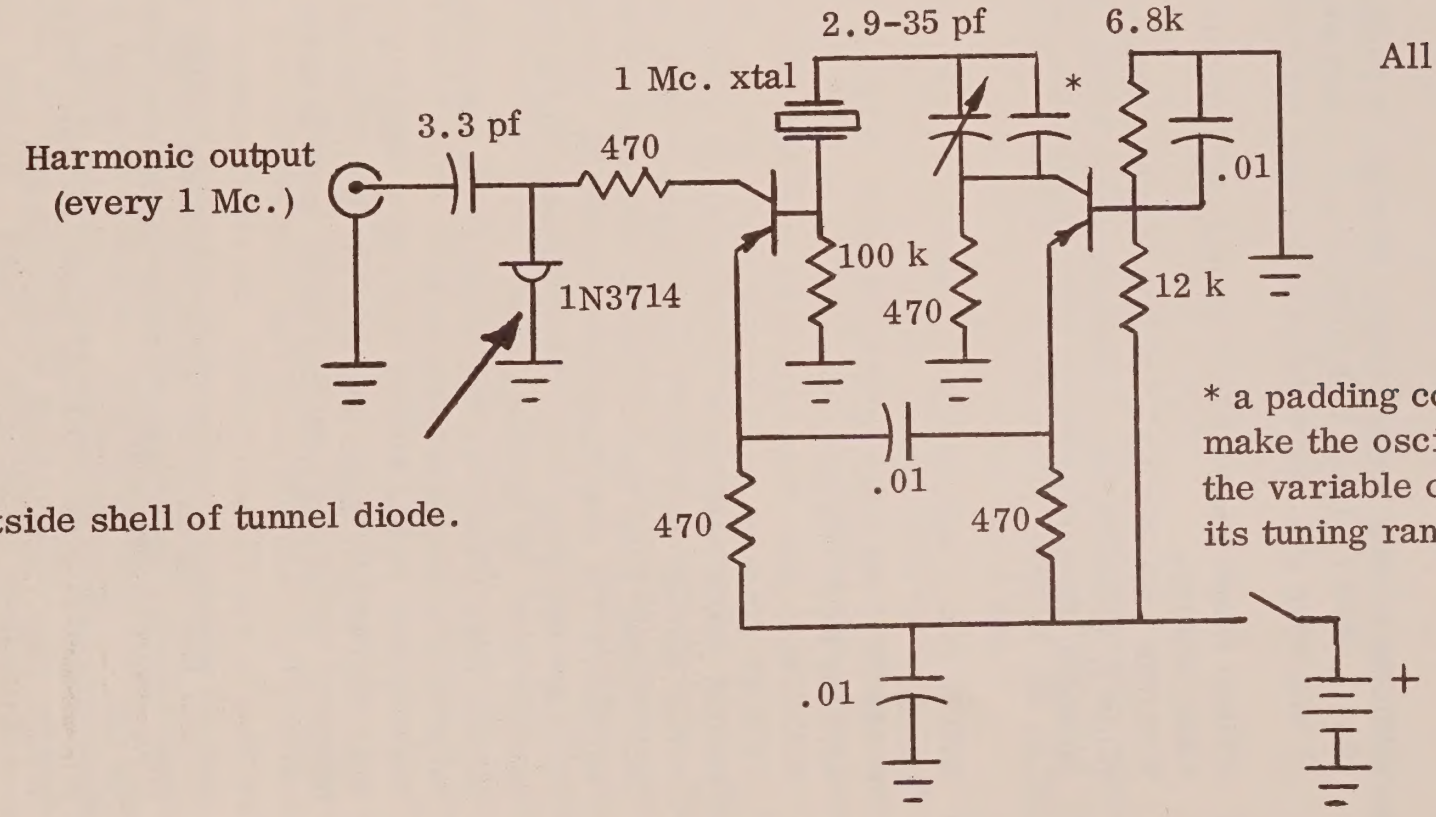
The noise blanker in the Nov. '65 VHFER got honorable mention in QST this month (Sept.) where it was reported that VK3ATN used it for his moonbounce tests (with the Parks preamp.) A couple of things should be pointed out in case any of you have been disappointed or misled. First, we shouldn't have called it a blanker as there is no gateing at all. It is a brute-force clipper. Second, when I use it with my production-line converter with a 14 Mc. I.F., I do not have enough gain to operate the clipper properly. I have to use a preamp ahead of the converter. Your ear should be able to distinguish between a clipped and un-clipped signal. The un-clipped has a rougher sound to it, while a heavily clipped signal is a smooth hiss. Of course using the preamp does mean more likelihood of overload from local stations and even non-locals a little ways up the band may put the clipper out of business. In order to prevent or minimize some of this overload I contracted to K7ZIR (who has made a batch of clippers for others) to make me a 7 Mc. unit which I though would give me better selectivity yet not be so narrow band that ringing of the tuned circuits would be a problem. Typically, I haven't tried it yet. I would think an even lower I.F. would work better.

PRICE CHANGES IN OUR AMATEUR LINE. As the Great Society lurches forward? it carries prices with it. Our costs have gone up considerably in the last few years since the two meter converter came out at $54.95. Labor is more expensive and darned hard to get. My only technician got called into service. It becomes more necessary to devote development time to our medical line. We're selling more ham gear than I like, and since competition is practically nil except for over-the-counter stuff to neophytes, the only logical conclusion is our stuff is priced too low. Our two products which take up the most time by far are the two meter converter and the 432. These are to go for $60 and $55.00 respectively. The 2-meter mobile preamp is going up to $20. All other prices stick, not because they are so profitable but because volume is so low it doesn't interfere with our work too much. Converter I.F. changes will be about double (including postage.) They take a lot of time and often a new set of coils. Get a quotation BEFORE you send in for re-do of the I.F.

(continued on back cover)

MARKER GENERATOR

We have sold a lot of marker generators with no diagrams accompanying them. At first, the people who bought had the issue of VHFER that described it, though the first diagram was not correct. For the benefit of diagram-less owners and others who would like to build we are printing the diagram just made up and we THINK it is correct. You may substitute transistors if you use high-freq. germaniums and perhaps juggle base current.



All Transistors 2N3324

* a padding condenser is frequently needed to make the oscillator zero beat with WWV when the variable capacitor is near the center of its tuning range.

If you make solder connections to penlight cells, be sure to remove the bottom protective metal cover as it makes erratic contact with the battery case unless it has pressure on it.

OPEN BANDS

by Marilyn Wiseman, K8ALO

Vacation time is over as far as this QTH is concerned. Spent 2 weeks camping in New York State on Lake Ontario. Activity on 2 meters in Watertown area very poor. Had only 2 contacts. Reports sure piled up in the mail box while away. Hoping to hear from you. My address: Box 103 Petersburg, Ohio 44454.

50 MHz:

Note: For 50 MHz, please send SCATTER listings only. No skip. Had quite a few reports that were not scatter.

June 1-30 WB6GKK (Calif.) wrkd K7BBO, W7CNK, W7VGQ (Wash.), W5KCP, W5SFW (Tex.), WØEYE (Colo.), K7ICW (Nev.). Gary says scatter sig abt aver. E skip very gud. He wrkd over 100 East coast stations during the month.

July 1-31 K7BBO (Wash.) wrkd K7ICW (Nev.), K7TLR (Ariz.), WØEYE (Colo.), 16 Calif. stations.
WB6GKK wrkd W7CNK, K7BBO, WA7BTG (Wash.), K7ICW (Nev.), WØEYE (Colo.), W5KCP (Tex.). Gary reports W7CNK, K7BBO runs sked around midnight, finding conditions often as good as morning skeds.

144 MHz:

June 5-19 K7ICW (Nev.) wrkd W6DEE, W6DQJ, W6WSQ, W6YVO, W6NLZ, K6TSK (Calif.)

June 11 WA4PTK (Tenn.) hrd K8RZB, W8TYX, W8CYO, K4PYN, WA4ELH. Dave says the band was open abt 2 hrs.

June 12 WN3EOQ/3 (Md.) running 5 watts wrkd K1RYT/1 (vt.).

July 18 VE3DNR (Toronto) wrkd K8CGP (Ohio) 260 mi, WA8REM (Mich.) 330 mi, K8HNE (Mich.) 330 mi, WA8AAQ 260 mi, K8TCA (Mich.) 290 mi, WA9EVE (Wis.) 450 mi. hrd W9VIT near Chicago. Stan said the band appeared to still be open when last DX station went QRT abt 0100 EST.

July 24 K2HLA (N.Y.) wrkd K4QIF (N.C.) 500 mi, W4VHH (S.C.) 735 mi, this was K2HLA's #21 state on 2. K7ICW (Nev.) hrd K6HAA wrkd WB6KAP, W6GDO M/S. Al hrd pings only.

July 29 K7ICW (Nev.) wrkd W5UGO (Okla.) M/S, hrd pings only.

Aug. 5 W4AWS (Fla.) wrkd W1AZK M/S.

Aug. 11 W4AWS (Fla.) wrkd W1BKK (Vt.) M/S. This was a new state for Art. Art also runs nightly skeds with W4VHH (S.C.) 325 mi. Art says that Shelby, W4WNH, is moving QTH this month and will be QRT for awhile.

432 MHz

K8OXZ (Cleveland, Ohio) reports hearing K9UIF, K9WOB, W9ZIH in QSO with Toledo. Russ wants to know whats wrong with the boys in the Northeast on 432.

June 12 K7ICW (Nev.) wrkd K7RKH/7 (Ariz.) 37 mi. First Nev.-Ariz. QSO on 432.

July 10 K7ICW (Nev.) hrd W6DQJ (Calif.) 225 mi.

July 17 K6HAA (Calif.) hrd K7ICW 165 mi.

Skeds Wanted

K2HLA, RFD #1, Cutchogue, L.I., N.Y. looking for M/S skeds with Minn., Tenn., Wis., Ala., Ga., Miss. Dick runs 500 W 4CX250 B 32 elem. collinear, W2AZL, 417A conv. Freq. 144.038, QTH 100 mi. east of N.Y.C. on eastern tip of Long Island.

K8OXZ, Cleveland, Ohio looking for sked with western Ohio, Manchester, Mich. on 432 MHz.

WB6GKK, 14081 Woodlawn Ave., Tustin, Calif. using Parks conv. Drake R4A SB 110A, Driving a 4-1000 A GG 1KW-CW & 2 KW PEP on SSB. 11 elem. 36' boom 60' freq. 50.006 CW, 50.107, 50.110, 50.113 SSB sked any morning of the week till 0830 PST.

W5GVE/4, Bill Nogues, 2601 Choctaw, Dothan, Ala. Freq. 144.085 MHz.

TWO METER E SKIP

Shelby Ennis, W4WNH, sent me a card on June 29 as follows: WA4SIQ, Maysville, Ky., just foned a report in. This morning (29 June) between 0557 and 0636 GMT John heard and/or worked W B6GMX, WB6FTD, WA6SQT, K7LCR, K7DU, KØCUX and an Idaho station. This was on 144 MHz fone!!!! (actually took place about 145.2 MHz.)

John reported the signals were weak and fluttery with the stations in and gone after about 3 minutes. He didn't have a chance to tune down to 144 and see what was cooking there. This would appear to be double-hop E_S - the first, to my knowledge, ever heard on 144. Looks like E_S has been good this year!

Ansel Gridley, W4GJO writes" It is my contention that the potential for E skip contacts on 144 is much greater than would be indicated by recorded contacts to date. There are really few operators who have shown much interest in this and far fewer who have worked at it scientifically as they have with meteor scatter. These "broadside" tries do work sometimes, as they did with W4QN into Texas about 1947, and as they did with Shelby. Certainly making noise on the band when there is widespread E_S activity, especially when it is in evidence through channel 6 TV is worthwhile. But until there is a lot of random activity on 2 meters, especially at odd hours, it seems that the likelihood of anyone being on in the right place is quite remote. The best method I know to set up likely contacts is to monitor 6 meters and watch for high-density E_S patches at an appropriate mid-point. Thus, for instance, if 6 meter stations 500-600 miles out are heard working very short skip (say 200-400 miles), it's a pretty good indication that the density in that approximate area is great enough to support 144 Mc. While 6 meters can be used as an order circuit, it would not be necessary if enough stations were on looking for this, as all they should need to do is fire up on 144 with the beam toward the E_S patch and call. If someone on the other side about the same distance is also doing this, that's all there is to it. This worked perfectly for W5SFW and me, when we easily worked on 144 after we both observed east Texas stations working other W5's in La., Okla., etc. And it worked just as well for Phil toward W8, VE3 etc., when he observed the same phenomenon at the appropriate midpoint. Yet, I don't think the technique is widely used even now, several years later. "

MORE ON THE "FANTASTIC" ANTENNA

I have mentioned the Kmosko and Johnson long, long yagis for 2 meters in the past few issues. These were described in the Jan. 56 QST. W7UAB built both the short and long versions and had excellent success in tropo work to Calif. Recently we attempted moon-bounce with the 32 foot one with W6DNG in Long Beach. Bill heard signals several d.b. above the noise but not long enough to identify calls (or letters). He says there was no question but what they were genuine reflections. We heard very weak signals but could not identify them well enough to be sure they were off the moon. It has been frustrating to me that I could not work the DX W7UAB did though I used very similar equipment. I made only 5 minute tests for the most part and perhaps longer times would have given me better results because at times I have heard excellent tropo signals--something rare in this area except to Seattle. When rationalizing the poor performance of one's station, it is easy to say "my location just isn't good for that path" and there may be some truth to it. But aiming at the moon puts us all in about the same boat. If your signals can be heard off the moon, something must be working. W7UAB could not hear his own echoes. W6DNG has a much superior receiving setup I hope to describe to you sometime. K6HAA has heard his own echoes several times using the same 32 foot antenna but with the moon near the horizon. In a quiet location that can pick up several db for you.

The conclusion is pretty inescapable that both the 24 and 32 foot antennas really work. W7UAB found that a big advantage of the 32 foot one was that he got rid of more power-leak noise off to one side than he could with the 24 foot antenna. The big antenna does move around in the wind though.

W7UAB has given up radio for boats and sold almost all his equipment. I got the antennas. So far I still haven't worked Calif. It must be the season.

May I say to you who have joined us recently (I feel like a stock market letter writer), that if you bought your 2-meter antenna at the local radio store you probably have a dog. There are only 2 good commercial ones I know of. One is the Skybeam by J-Beam and the other is the big Telrex (17 ft I think.) As models change, performance may change. From antennas I've measured I don't believe any U.S. manufacturer knows what he's doing. Your antenna is probably the weakest link in your station. K7AAD

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